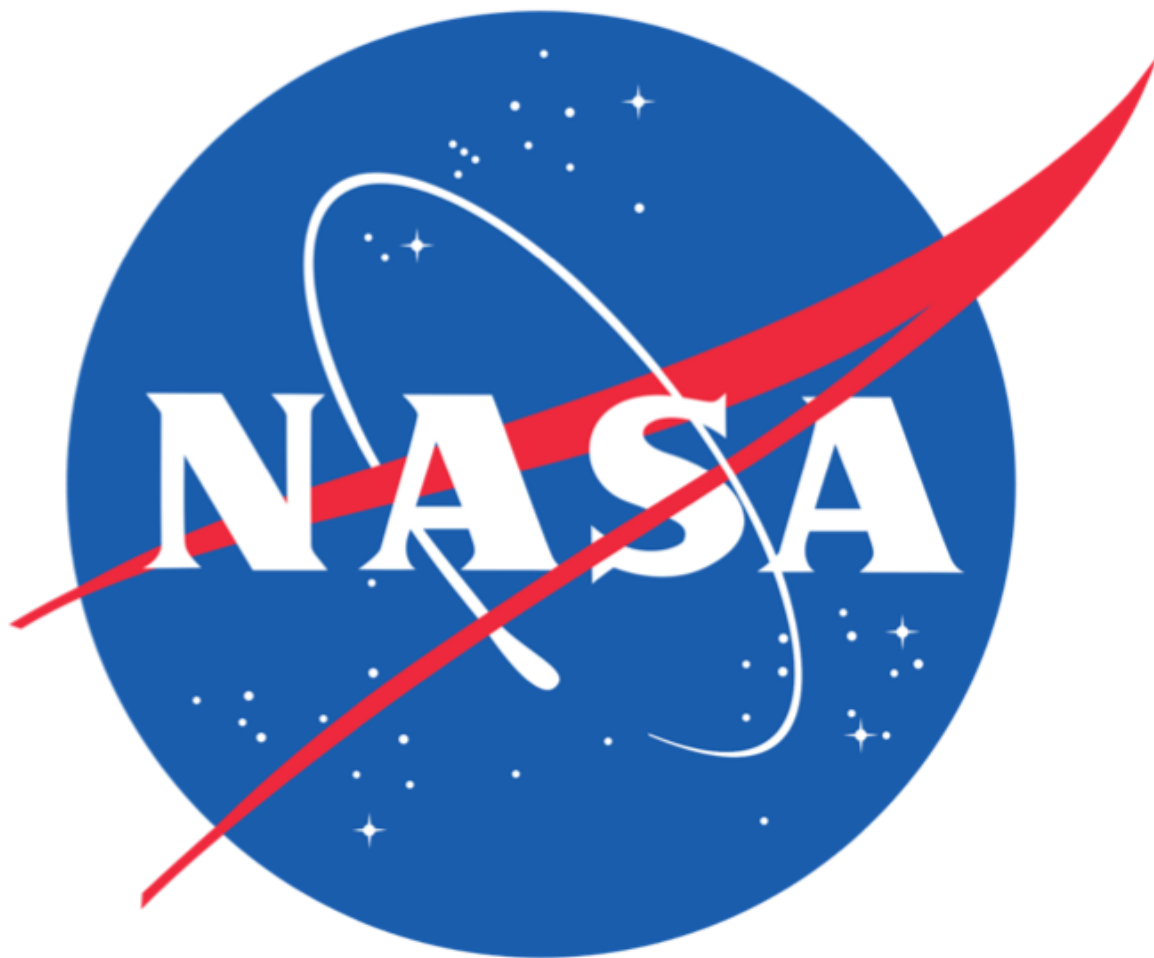


## Small Business Innovation Research   Small Business Technology TRansfer

Dr. Joseph Grant | STTR Overview | 02.28.18



# SBIR / STTR Programs Vision and Mission

## VISION

Empower small businesses to deliver technological innovation that contributes to NASA's missions, provides societal benefit, and grows the US economy.

NASA's SBIR and STTR programs have awarded **more than \$3.3 billion** to research-intensive American small businesses

## MISSION

Create opportunities through SBIR/STTR awards to leverage small business knowledge and technology development for maximum impact and contribution

Engineers and scientists from **more than 12,000** small businesses in all 50 States, DC and Puerto Rico have participated



# The STTR Program

## Small Business Technology Transfer (STTR)



- STTR facilitates cooperative R&D between small business concerns and U.S. research institutions – with potential for commercialization
- For FY17, 0.45% of the extramural research budget for all agencies with a budget greater than \$1B per year (5 federal agencies presently participate)
- The STTR program has a statutory requirement to stimulate a partnership of ideas and technologies between innovative small business concerns (SBCs) and Research Institutions through Federally-funded research or research and development (R/R&D).
- STTR also adheres to SBA directives to increase participation by Women-Owned, Veteran-Owned and Small Disadvantaged Businesses and outreach to HBCUs and Minority Serving Institutions. Outreach is also made to under represented areas/regions of the country.

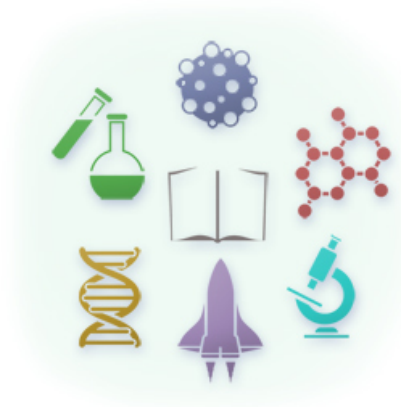
# Why Should You Participate in STTR?

## For the Small Business Concerns

- Opportunity to Leverage expertise and innovative ideas from Professors/Research Staff/Students
- Opportunity to leverage specialized facilities and experimental equipment at the Research Institutions (RIs) when often SBCs may not be able to afford such facilities on their own
- Opportunity to Create Pipeline of Usable Talent for Company from the RIs
- Develop working relationship & credibility with government R&D
- Fosters partnerships with large corporations and academia
- Provides recognition and visibility for your business
- Participation attracts venture capital and other funding sources

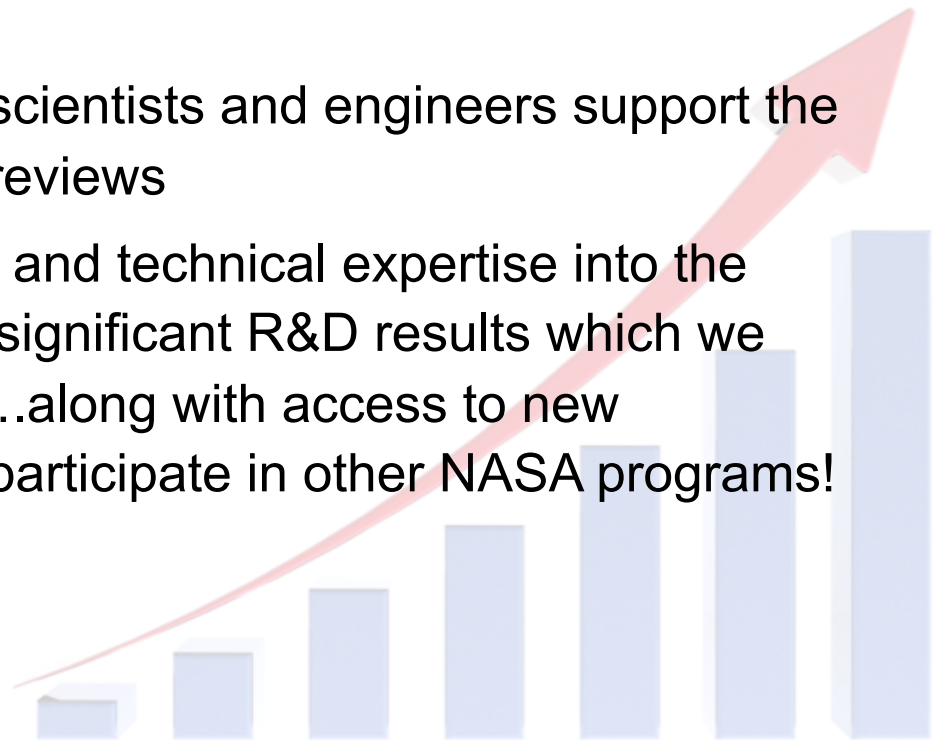
## For the Research Institutions

- Opportunity to Create/Inspire Entrepreneurship as a vital part of the Educational Experience
- Another opportunity to access federal funding for research
- An opportunity sometimes to get RI Intellectual Property (IP) involved in the project and licensed
- Another means for visibility in the research community, generate peer-reviewed pubs., etc.



# NASA Program Background

- NASA's SBIR and STTR programs have awarded more than **\$3.3B** to research-intensive American small businesses to date; STTR makes up close to **\$300M** of that figure
- Engineers and scientists from more than 12,000 Firms in all 50 States, DC, and Puerto Rico have participated across the two programs
- Each year about 1,700 NASA scientists and engineers support the program performing technical reviews
- NASA invests significant funds and technical expertise into the program and is rewarded with significant R&D results which we infuse into our programs.....along with access to new businesses and RIs who may participate in other NASA programs!



# Participating Federal Agencies

## STTR Programs



Department of  
Defense (DoD)



National  
Aeronautics and  
Space  
Administration  
(NASA)



National Science  
Foundation (NSF)



Department of  
Health and  
Human Services  
(HHS)

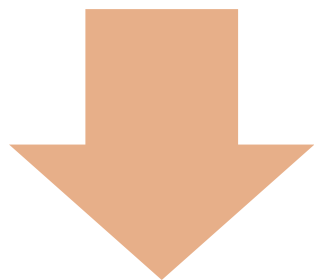


Department of  
Energy (DoE)

# Agency SBIR / STTR Differences

## CONTRACTING AGENCIES

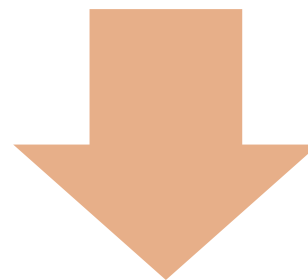
- Agency establishes plans, protocols, requirements
- Highly focused topics
- **Procurement** mechanism for DOD and NASA
- More fiscal requirements



**NASA, DoD, HHS/NIH, ED,  
EPA, DOT, DOC**

## GRANTING AGENCIES

- Investigator initiates
- Approach
- Less-specified topics
- **Assistance** mechanism
- More flexibility



**HHS/NIH, NSF, ED,  
USDA, DOE**



# STTR Eligibility Requirements

- Must be located in the United States and at least 51% owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States
- Formal Cooperative R&D effort with a U.S. Research Institution
- Minimum 40% by small business, 30% by U.S. Research Institution (still have 30% that can be shared between the two parties or used for subcontracting, etc.)
- Small business is Prime, Principal Investigator can be from Small Business Concern or Research Institution
- The U.S. research institution (RI) must be an accredited college/university, a federal research and development center, or other non-profit research organization
- Other SBIR requirements generally also apply



# SBIR/STTR Program Structure

## Phase I: Concept

- Award Guideline: \$125K
- Duration: 6 months (SBIR)  
13 months (STTR)



## Phase II: Full Research R&D to Prototype

- Award Guideline: \$750K
- Duration: 24 months
  - Phase II-E → 1:1 Matching up to \$375K



## Phase III: Transition to Commercialization/Infusion

Non-SBIR/STTR funds

- Contract from NASA program or other Agency
- Prime contractor



Go to [www.sbir.nasa.gov](http://www.sbir.nasa.gov) for details

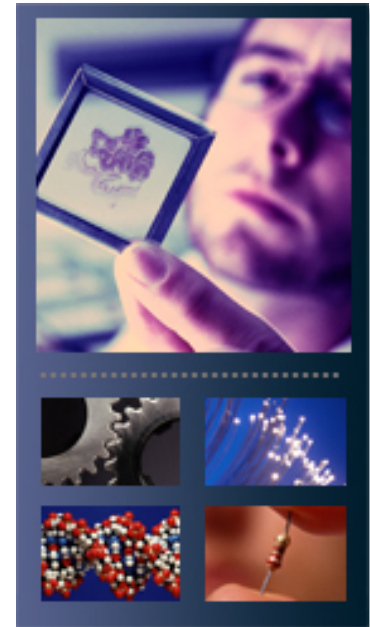
# Intellectual Property

## Patent Rights

- Small business concerns normally retain the principal worldwide patent rights to any invention developed with Government support

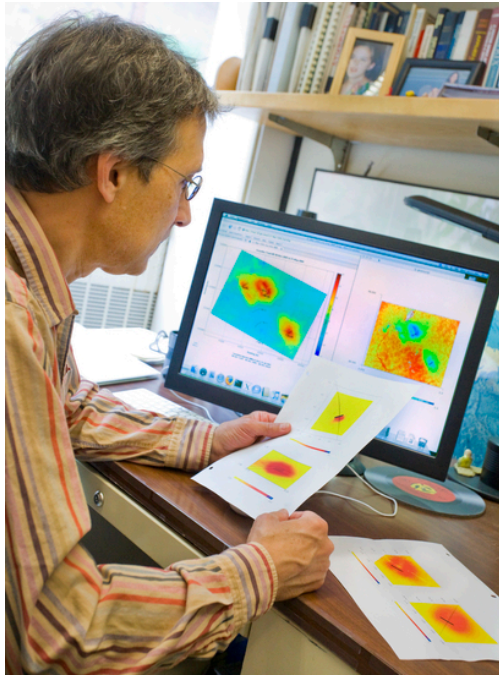
## Government Use

- The Federal Government receives a royalty-free license for Federal Government use



**U.S. Patent and Trade Office**

<http://www.uspto.gov/>



## Protection Period

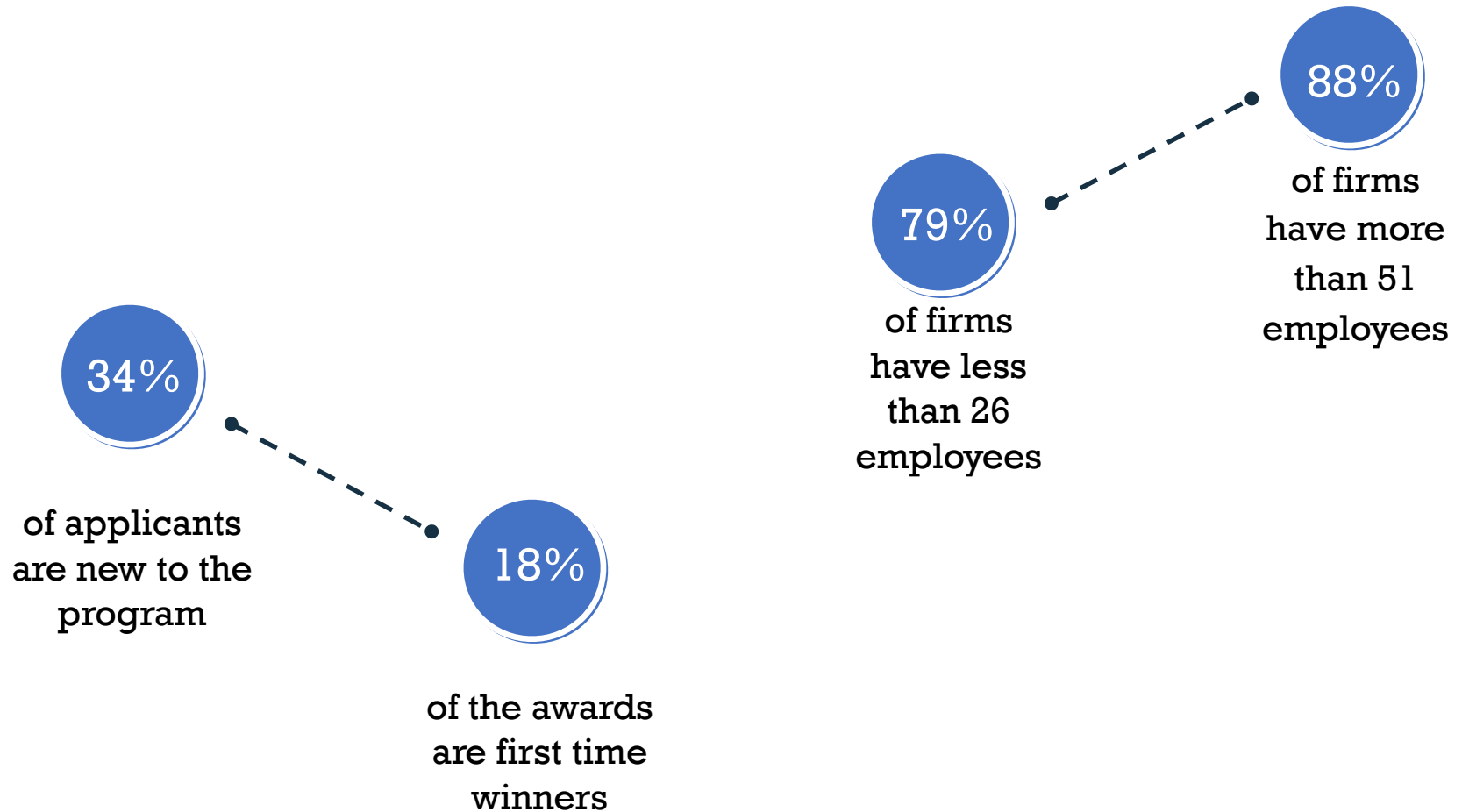
- Data generated from your R/R&D is protected from public disclosure for a minimum of 4 years (civilian agencies) or 5 years (DOD) after the conclusion of your award (Phase I, Phase II, or federally funded Phase III)

## Government Use

- The Government retains a royalty-free license for Government use of any technical data delivered under an SBIR award, whether patented or not

# Working with Small Businesses

## FY17 Phase I SBIR/STTR Awards Data Points





# Program 2018 Initiatives

## I-Corps

In partnership with the National Science Foundation (NSF), NASA is offering the I-Corps program to educate selected teams on how to translate technologies from the laboratory into the marketplace.

<http://sbir.nasa.gov/content/I-Corps>



# Mentor-Protégé Program

The NASA Mentor-Protégé Program encourages NASA prime contractors to assist eligible protégés to:

- Enhance their capabilities to perform on NASA contracts and subcontracts,
- Foster the establishment of long-term business relationships between these entities and NASA prime contractors, and
- Increase the overall number of these entities that receive NASA contract and subcontract awards.

For more information on the Mentor-Protégé Program visit:

<http://www.osbp.nasa.gov/mpp/index.html>



# Learning about NASA's Needs

## Focus Areas

NASA's research subtopics are organized by "Focus Areas" that group interests and related technologies.

- **Identify** the Area(s) closest to your innovation/idea
- **Go** to our website to research
- **Prepare to write** a proposal tailored to NASA's needs

<https://sbir.nasa.gov/solicitations>

### 2018 Focus Areas

- |   |   |
|---|---|
| 1. In-Space Propulsion Technologies         | 12. Entry, Descent and Landing Systems                            |
| 2. Power and Energy Storage                 | 13. Information Technologies for Science Data                     |
| 3. Autonomous Systems for Space Exploration | 14. In-Space and Advanced Manufacturing                           |
| 4. Robotic Systems for Space Exploration    | 15. Lightweight Materials, Structures, Assembly, and Construction |
| 5. Communications and Navigation            | 16. Ground and Launch Processing                                  |
| 6. Life Support and Habitation Systems      | 17. Thermal Management Systems                                    |
| 7. Human Research and Health Maintenance    | 18. Air Vehicle Technology  |
| 8. In-Situ Resource Utilization             | 19. Integrated Flight Systems                                     |
| 9. Sensors, Detectors and Instruments       | 20. Airspace Operations and Safety                                |
| 10. Advanced Telescope Technologies         | 21. Small Spacecraft Technologies                                 |
| 11. Spacecraft and Platform Systems         | 22. ISS Utilization and Microgravity Research                     |



# NASA's Technology Roadmaps

**TA 1**



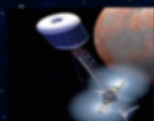
**LAUNCH PROPULSION SYSTEMS**

**TA 2**



**IN-SPACE PROPULSION TECHNOLOGIES**

**TA 3**



**SPACE POWER AND ENERGY STORAGE**

**TA 4**



**ROBOTICS AND AUTONOMOUS SYSTEMS**

**TA 5**



**COMMUNICATIONS, NAVIGATION, AND ORBITAL DEBRIS TRACKING AND CHARACTERIZATION SYSTEMS**

**TA 6**



**HUMAN HEALTH, LIFE SUPPORT, AND HABITATION SYSTEMS**

**TA 7**



**HUMAN EXPLORATION DESTINATION SYSTEMS**

**TA 8**



**SCIENCE INSTRUMENTS, OBSERVATORIES, AND SENSOR SYSTEMS**

**TA 9**



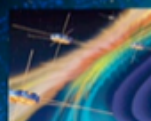
**ENTRY, DESCENT, AND LANDING SYSTEMS**

**TA 10**



**NANOTECHNOLOGY**

**TA 11**



**MODELING, SIMULATION, INFORMATION TECHNOLOGY, AND PROCESSING**

**TA 12**



**MATERIALS, STRUCTURES, MECHANICAL SYSTEMS, AND MANUFACTURING**

**TA 13**



**GROUND AND LAUNCH SYSTEMS**

**TA 14**



**THERMAL MANAGEMENT SYSTEMS**

**TA 15**

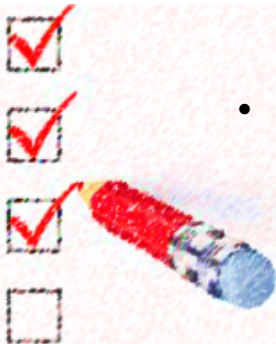


**AERONAUTICS**

<https://www.nasa.gov/offices/oct/home/roadmaps/index.html>

# Checklist before Submitting Application

- Submit proposal prior to the deadline
- Perform the “Endorse Proposal” step, which is the final step in the submissions process
- Make sure you meet the format requirements (margin and font size, page limitation)
- Have the RI register correctly (STTR Requirement)
  - For STTR proposals the RI needs to endorse the Research Agreement prior to your proposal being complete and submitted
    - RI will need to create an account in the Proposal Submission EHB
    - register under your firm using your EIN, State, and PIN so they are attached to your proposal correctly
    - choose the RI option at the bottom of the page when entering their name, email, phone etc





**2018 Solicitation is Open!**

# **NASA SBIR/STTR 2018 PROGRAM SOLICITATION OPENS JANUARY 11, 2018**



Jan. 11 - Mar. 9

Website: [www.sbir.nasa.gov](http://www.sbir.nasa.gov)

NASA Help Desk: 301.937.0888

# NASA SBIR/STTR Website [www.sbir.nasa.gov](http://www.sbir.nasa.gov)

The NASA SBIR/STTR website is located at [www.sbir.nasa.gov](http://www.sbir.nasa.gov)

**Research NASA's Needs**  
Annual Solicitations including past years

## Looking to Join the Program?

- Program Basics
- Forms Library
- Model Contract
- In-depth Training Resources and FAQs

**SBIR/STTR**  
Small Business Innovation Research / Small Business Technology Transfer

HOME ABOUT SBIR/STTR SOLICITATIONS SCHEDULE & AWARDS HANDBOOKS MULTIMEDIA CONTACT US

2017 INDUSTRY DAY  
SELECTION ANNOUNCEMENT  
NATIONAL CONFERENCE  
**SUCCESS STORIES**  
TECHNOLOGIES

**TETHERS UNLIMITED, INC.**

**Success Stories**  
**CubeSat Thrusters Powered by Green Propellant**  
Tethers Unlimited, Inc.'s (TUI) green propulsion system called HYDROS is used to power CubeSats, a type of miniaturized satellite  
[Read More](#)

**Proposers**  
SBIR/STTR Basics  
SBIR/STTR Schedule  
Participation Guide  
SBIR/STTR Firms Library  
Model Contract

**Awardees**  
SBIR/STTR Schedule  
SBIR/STTR Firms Library  
Additional Sources of Assistance  
Awardee Firm's EHB  
Training Resources

**Demographics Data**  
State-based Statistics  
Award Search  
FY 2012 Economic Impact Report

**Contact the Program**  
SBIR/STTR Helpdesk  
and Program Points of  
Contact

# SBIR/STTR Success

## PHASE III SUCCESS

\$525,000 Grand Prize winner of the Nokia XChallenge. Awarded Over several million dollars in funding from private investors, and multiple biotech and pharmaceutical partners.

## SNAPSHOT

Self-diagnosis for astronauts on long missions in outer space is possible using an innovative blood analysis system which can generate comprehensive medical test results within minutes using a single drop of blood.

## Easy and Non-intrusive Nanoscale Diagnostic Platform

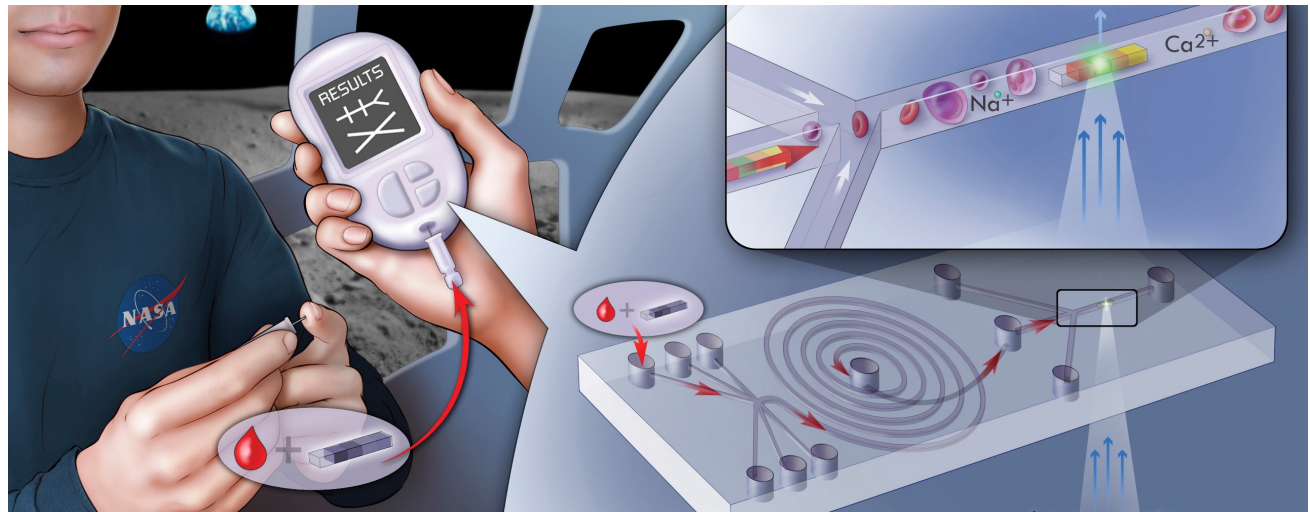
DNA Medicine Institute (DMI), Cambridge, Massachusetts

### Challenge

NASA had been searching for ways to monitor the health of astronauts during long missions using tests that would be easy to administer and are not intrusive. NASA also wanted to enable astronauts to address medical issues immediately without waiting for guidance from mission control.

### Innovation

DMI developed a comprehensive nanoscale diagnostic platform to meet these stringent requirements. The solution includes fluorescence-based test strips, a hand-held sensor and software to generate a medical results dashboard.



# SBIR/STTR Success

## PHASE III SUCCESS

Recent Phase III follow-on contracts with NASA worth \$200K to supply the UBC to the International Space Station; technology results in cost savings of \$2 million per launch.

## SNAPSHOT

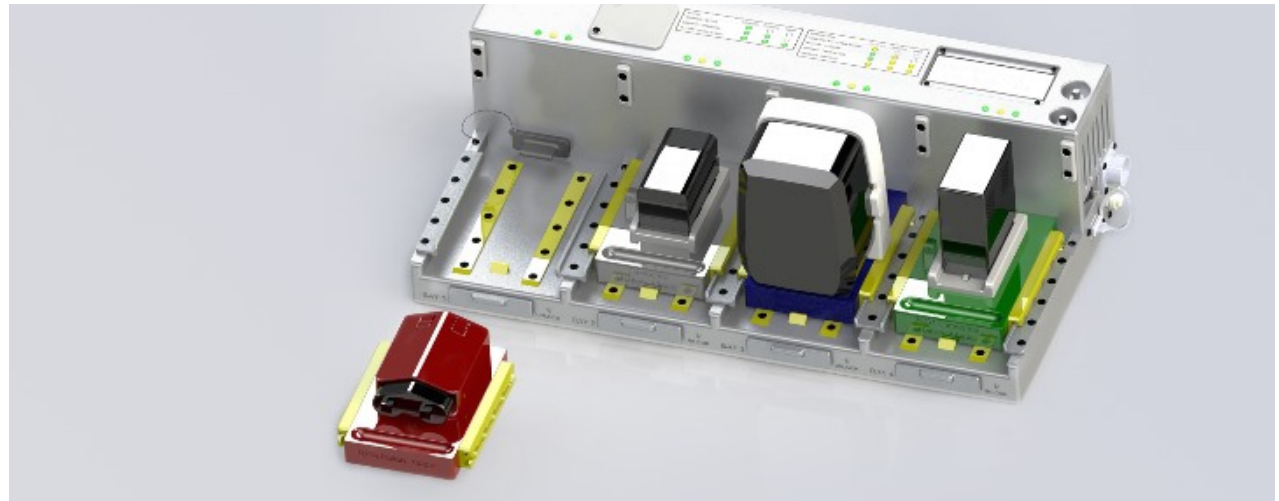
Aurora Flight Science has utilized the NASA SBIR program to develop a Universal Battery Charger for use on the ISS capable of interfacing with the most commonly used batteries on board.

## ISS Universal Battery Charger (UBC)

Aurora Flight Sciences Corporation, Manassas, VA

### Innovation

From camcorders and digital cameras, to science experiments, to drills, the International Space Station is home to a handful of tech gadgets and power tools that constantly need to be charged. Just like on Earth, all of these things require their own dedicated chargers. While the obvious inconvenience of lugging dozens of various adapters to space might seem like reason enough to invest in a universal battery charger, the driving force is actually the cost. The estimated total to launch 1 kg (a little over 2 pounds) of equipment into orbit is over \$10,000. Although the newer launch vehicles may drive that figure down, it will still cost thousands of dollars to send equipment into space – necessitating a simpler, cost-effective system for use on the ISS.





# SBIR/STTR Success

## PHASE III SUCCESS

More than \$3 million in follow-on contracts with NASA, DOD, and private companies.

## SNAPSHOT

Honeybee Robotics has developed advanced robotic and electromechanical systems that operate in challenging environments in space and on Earth. Since 2003, every NASA spacecraft to land on the Martian surface has utilized technology built by Honeybee.

## Compact Lightweight Sampling Drill for Planetary Exploration

Honeybee Robotics, Ltd., New York, New York

### Innovation

From Brooklyn, New York-based Honeybee Robotics has spent over fifteen years developing advanced robotics systems and planetary drills that allow scientists to explore planets in three dimensions. The company's meter-class drill extraction systems were originally intended for lunar missions. Honeybee had a vision of sustaining a human or robotic presence on the Moon to mine local resources from a central base, thus decreasing the cost and wait times associated with sending them up from Earth.





Contact us and let's innovate together

Website: **[www.sbir.nasa.gov](http://www.sbir.nasa.gov)**

NASA Help Desk: **301.937.0888**